DATA EVALUATION RECORD PAGE 1 OF

CASE: 85 TERBUTRYN

CONT-CAT: 01 GUIDELINES: 72-2

MRID: 139440

Vilkas, A.G. (1977) Acute Toxicity of Terbutryn FL 761552 to the Water Flea~Daphnia magna~Straus: UCES Project # 11506-04-02. (Unpublished study received Aug 16, 1977 under 100-496; prepared by Union Carbide Corp., submitted by Ciba-Geigy Corp., Greensboro, N.C.; CDL:231315-J)

REVIEW RESULTS:

VALID X INVALID ____ INCOMPLETE ____

GUIDELINE: SATISFIED X PARTIALLY SATISFIED ____ NOT SATISFIED ____

DIRECT RVW TIME = 2 hr START DATE: 4/17/86 END DATE: 4/18/86

REVIEWED BY: Larry Turner

TITLE: Biologist

ORG: EEB/HED

LOC/TEL: 557-1977

SIGNATURE: Larry Turner DATE: 6/9/86

APPROVED BY: Norman Cook

TITLE: Head-Section 2

ORG: EEB/HED

LOC/TEL: 557-7446

SIGNATURE: Norman Cook DATE:

DATA EVALUATION RECORD

1. Chemical: Terbutryn, Shaughnessy #080813

2. Test Material: Terbutryn, FL 761552, 97.1% ai

3. Study Type: Aquatic Invertebrate Acute Toxicity

   Species Tested: Daphnia magna

4. Study ID: Vilkas, A.G. (1977) Acute Toxicity of Terbutryn FL 761552 to the Water FLea, Daphnia magna Straus: UCES Project #11506-04-02. (Unpublished study conducted by Union Carbide Environmental Services, Tarrytown, NY; submitted by Ciba-Geigy Corp., Greensboro, NC. MRID #139440, Accession No. 23135).

5. Reviewed by: Larry Turner
   Biologist
   EEB/HED
   Signature: Larry Turner
   Date: 6/4/86

6. Approved by: Norman Cook
   Head-Section 2
   EEB/HED
   Signature: Norman Cook
   Date: 6.4.86

7. Conclusions:

This study is scientifically sound. With a 48-hour LC_{50} of 2.66 ppm, technical terbutryn is considered moderately toxic to freshwater aquatic invertebrates. This study fulfills the Guideline requirement for an acute toxicity study with aquatic invertebrates.

8. Recommendations:

N/A.

9. Background:

10. Discussion of Individual Test:

11. Materials and Methods:

a. Test Animals: Test animals were Daphnia magna, less than 20 hours old, obtained from a laboratory culture, with original stock derived from the Duluth, MN National Water Quality Laboratory.

b. Test System: Tests were conducted with filtered soft water obtained from a small lake in Westchester County, NY. Test vessels were 250 mL beakers containing 200 mL of water at 17 ± 1 °C. The static bioassay was conducted for 48 hours. Acetone was used as a solvent.

c. Dose: Test concentrations (nominal) were 0.56, 1.00, 1.80, 3.20, and 5.60 ppm plus a control and solvent control.

d. Design: Four replicate beakers, each containing five daphnids per beaker, were used for each of five concentrations plus controls.

e. Statistics: The LC_{50} value was derived according to the Spearman-Karber Estimator (Finney 1971), based on nominal concentrations.

12. Reported Results:

The 48-hour LC_{50} was found to be 2.66 ppm. The no-effect-level was less than 0.56 ppm. The 24-hour LC_{50} was greater than 5.6 ppm.

13. Study Author's Conclusions:

The Daphnia magna 48-hour LC_{50} (95% ci) = 2.66 (2.16 to 3.27) ppm.

No QA measures were reported.

14. Reviewer's Discussion and Interpretation of the Study:

a. Test Procedures: Procedures were closely in accordance with acceptable protocols.

b. Statistical Analysis: Analysis according to the Stephan program showed the 48-hour LC_{50} to be 2.7 ppm according to the probit method. This is essentially the same as reported. Analysis attached.

c. Discussion/Results: With a 48-hour LC_{50} of 2.7 ppm, terbutryn technical is considered moderately toxic to Daphnia magna.

d. Adequacy of Study:

1. Classification: Core.

2. Rationale: N/A.

3. Repairability: N/A.

15. Completion of One-Liner:

One-Liner completed May 19, 1986.

16. CBI Appendix:

N/A.

turner terbutryn tech Daphnia magna 48 hour lc50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
5.6	20	19	95	2.002716E-03
3.2	20	9	45	41.19014
1.8	20	5	25	2.069473
1	20	2	10	2.012253E-02
.56	20	1	5	2.002716E-03

THE BINOMIAL TEST SHOWS THAT 1.8 AND 5.6 CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 3.354607

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	.1020643	2.783076	2.265105	3.536587

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	
OODNESS OF FIT PROBABILITY			
4	.1191187	1	.1772254

SLOPE = 3.079163
95 PERCENT CONFIDENCE LIMITS = 2.016434 AND 4.141892

LC50 = 2.694282
95 PERCENT CONFIDENCE LIMITS = 2.1423 AND 3.520774

LC10 = 1.042301
95 PERCENT CONFIDENCE LIMITS = .6272356 AND 1.392001

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